

Serial No. 10/710,250

Atty Docket DP-300915

REMARKS

Claims 1 and 12 are amended to clarify that the first end and second end of the second conductors overlie the first end and the second end of the corresponding first conductor in a direction normal to the surface, see Figs. 2-7.

While Applicants believe that "overlie," in its ordinary meaning, refers to a direction normal to the surface, the amendments are presented in an effort to avoid ambiguity and advance prosecution. In the event that the amendments are not deemed to place the claims in condition for allowance, it is requested that they be entered nevertheless, if only for purposes of clarifying issues for appeal.

Claim Rejection based on Hamamoto et al.

Claims 1 - 19 were rejected under 35 U.S.C. 103(a) as being obvious over United States Publication Number 2002/0185169 A1 by Hamamoto et al.

Hamamoto et al. describes a thermocouple structure that is essentially the prior art shown in Fig. 1 and described in the Background of the present application. The structure is formed of two conductors, layers 6 and 8 in Hamamoto et al. and conductors 112 and 114 in Fig. 1 of the application. In contrast, Applicants' thermocouple structure is formed of three conductors, conductors 12, 14 and 24 in Fig. 2.

In order to find three conductors in Hamamoto et al., the rejection points to the portion of conductor 8 that fills contact holes 7a in Fig. 2 as corresponding to Applicants' second conductor and the portion of conductor 8 that is above holes 7a as corresponding to Applicants' third conductor.

Serial No. 10/710,250

Atty Docket DP-300915

In the rejection, the proportioning in and above the hole is intentional to provide thicknesses that correspond to Applicants' conductors. It is a significant feature of Applicants' structure that the third conductor is thicker than the second conductor. In this manner, the second conductor may be made thinner to improve performance by minimizing heat loss through the second conductor, thereby providing higher sensor output, see paragraph 0018. The third conductor is made thicker to more reliably negotiate the steps defined by the dielectric layer 26 and conductors 12 and 14 with reduced risk of breakage thereby providing a more reliable connection by traversing the irregular surfaces between adjacent first conductors, see paragraph 0016. Nothing in Hamamoto et al. even remotely suggests using conductors of differing thicknesses on the dielectric to improve performance in this manner.

Even assuming the proportioning in the rejection, the in-hole portion in Hamamoto et al. lacks the features to correspond to Applicants' second conductor. Applicants' second conductor is on the dielectric layer. The portion in the holes in Hamamoto et al. is not. Applicants' second conductor has a first end overlying the first end of the first conductor and a second end overlying the second end of the first conductor. In Hamamoto et al., one end of the in-hole portion contacts the end of the first conductor but then the other end at the top of the hole overlies the same end. There is a further key feature. The second end of the Applicants' second conductor not only overlies the second end of the first conductor, but is spaced apart by the dielectric layer. In Hamamoto et al., there is only metal between the top of the in-hole portion and the underlying end of the first conductor. For these reasons, the in-hole portion in Hamamoto et al. does not correspond to Applicants' second conductor, and so Hamamoto et al. does not anticipate or suggest Applicants' thermocouple structure.

Serial No. 10/710,250

Any Docket DP-300915

Claim 1 is directed to Applicants' stacked thermocouple structure that includes first conductors, second conductors and third conductors. Each first conductor has a first end and a second end. In accordance with the claim, each second conductor is on the dielectric. The portion that the rejection points to in Hamamoto et al. is not on the dielectric, but rather is in a hole through the dielectric so that it can lie on the first conductor. The claim recites that the second conductor has a first end overlying the first end of the first conductor and a second end overlying the second end of the first conductor. In Hamamoto et al., both ends overlie an end of the first conductor. Moreover, the claim calls for a third conductor that connects second ends of first and second conductors, and further has a thickness greater than the second conductor. The reason for the in-hole above-hole distinction in the rejection is not to be forgotten, though. Applicants' structure includes third conductors. As recited in the claim, each third conductor connects second ends of first and second conductors, and has a thickness greater than the second conductor. Fairly read, Hamamoto et al. only has two sets of conductors, and does not show a third conductor to bridge the second ends of a second conductor and the next first conductor. Thus despite the attempt in the rejection to divide the second conductor in Hamamoto et al., it does not lead to portions that have the features in Applicants' structure in claim 1.

The skilled practitioner would readily perceive the features that distinguish Applicants' thermocouple structure in claim 1. Nevertheless, the rejection seems to have a concern that Applicants are attempting to claim the conventional two conductor structure. In an attempt to address that concern, and advance prosecution, Applicants have presented amendments to claim 1. If the Examiner has suggestions for additional amendments to the wording, he or she is urged to contact the undersigned to propose them.

Serial No. 10/710,250

Arty Docket DP-300915

Claims 2-11 are dependent upon claim 1 and so not taught or suggested by Hamamoto et al. at least for the reasons set forth with regard to that claim.

Similarly, claim 12 is directed to Applicants' stacked thermocouple structure that includes first conductors, second conductors and third conductors that include the features discussed for claim 1. Hamamoto et al. cannot be fairly read as showing three conductors with these features, and so does not suggest the structure in claim 12, or claims 13-19 dependent thereon.

Accordingly, Applicants respectfully request that the rejection based in Hamamoto et al. be reconsidered and withdrawn, and that the claims be allowed.

Serial No. 10/710,250

Atty Docket DP-300915


Conclusion

It is believed, in view of the remarks herein, that the grounds of rejection has been addressed and overcome, and that all claims are in condition for allowance. Therefore, it is respectfully requested that all rejections be withdrawn and that the claims be considered in the present application.

If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



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